Section – B

(Short Answers)

Note: Answer any TEN of the following questions. Each question carries 05 marks.

Q.2 If $A=\{1,2,3,4\}$ and $B=\{2,4,6,8\}$ show that $A\Delta B=(A-B)\cup(B-A)$.

Q.3 If $a=\sqrt{10}-3$, find the value of $a+\frac{1}{a}$, $a-\frac{1}{a}$ and $a^2-\frac{1}{a^2}$.

Q.4 Simplify:

(i) $\left(\frac{18x^4y^3z^2}{6ab^2c^5}\right)^3$ (ii) $\left(\frac{3a^3b^2c^6}{xyz}\right)^{-5}$

Q.5 The measure of a diameter of the moon is 3500 km. After converting if into centimeters, write if in scientific notation.

Q.6 Find the value of y:

(i) $\log_{\sqrt{5}} 25=y$ (ii) $\log_{55} 55=y$

Q.7 Find the H.C.F of the following polynomial by factor method.

$$9x^2+63x+108,\ 9x^2-45x-216\ \text{and}\ 18x^2+45x-27$$

Q.8 If $a+\frac{1}{a}=2$ prove that $a^2+\frac{1}{a^2}=a^4+\frac{1}{a^4}=a^3+\frac{1}{a^3}$.

Q.9 Solve if possible by using cramer's rule:

$$x+2y=6\ ,\ 2x+7y=3$$

Q.10 A mother is 21 years older than her new born baby, How old will the baby be when her age is $\frac{1}{4}$ that her mother.

Q.11 Resolve into factors: $a^4(b^2-c^2)+b^4(c^2-a^2)+c^4(a^2-b^2)$.

Q.12 Define median. How do we calculate median for grouped data?

Q.13 What number must be added to each term of the ratio 5 : 27 to make it equal to 1 : 3.

Q.14 Find the solution set of the equation: $\sqrt{12x-4}=\sqrt{4x+8}$, and also verify the answer.

Q.15 Find the number of digit in (i) 3^{19} (ii) 9^{48}

Section – C

(Descriptive)

Note: Answer any TWO of the following questions. Each question carries 15 marks.

Q.16 (a) The product of two expression is $12x^4-34x^3+37x^2-17x+5$, if one expression is $3x^2-7x+5$, find the other.

(b) Factorize: $36x^2+154x-36$

Q.17 (a) Using the appropriate formula, find the values:

(i) (1104 x 1104) (ii) $(98)^2$

(b) Following are the daily earning (in Rs) of ten workers:

188, 170, 172, 125, 115, 195, 181, 190, 195, 190

Calculate: (i) Arithmetic Mean (ii) Median (iii) Mode

Q.18 (a) Ali standing in a stream find that the measures of the angles of elevation of two trees, of heights 6 m and 8m, on opposite banks in the line with him are of 30° and 45°, respectively. Find the width of the stream.

(b) Define any TWO of the following terms and illustrate with figure.

(i) Tangent to the circle

(ii) Supplement Postulate

(iii) Interior and exterior of triangle.